Know the following identities:

(1)	Difference of Squares:	$a^2 - b^2 = (a+b)(a-b)$
(2)	Difference of Cubes:	$a^3 - b^3 = (a-b)(a^2+ab+b^2)$
(3)	Sum of Cubes:	$a^3 + b^3 = (a+b)(a^2-ab+b^2)$
(4)		$(a+b)^2 = a^2 + 2ab + b^2$
(5)		$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

1. Factor into linear factors whenever possible. Then solve.

   (a) $x^2 + 2x + 1 = 0$
   $(x+1)^2 = 0 \Longrightarrow x = -1$

   (b) $x^2 + 6x + 8 = 0$
   $(x+2)(x+4) = 0 \Longrightarrow x = -2$ or $x = -4$

   (c) $x^2 - 2x - 24 = 0$
   $(x-6)(x+4) = 0 \Longrightarrow x = 6$ or $x = -4$

   (d) $3x^2 + x - 2 = 0$
   $(x+1)(3x-2) = 0 \Longrightarrow x = -1$ or $x = 2/3$

   (e) $2x^2 + x - 3 = 0$
   $(x-1)(2x+3) = 0 \Longrightarrow x = 1$ or $x = -3/2$

   (f) $x^2 - 4 = 0$
   $(x+2)(x-2) = 0 \Longrightarrow x = \pm 2$

   (g) $9x^2 - 16 = 0$
   $(3x+4)(3x-4) = 0 \Longrightarrow x = \pm 4/3$

   (h) $x^3 + 8 = 0$
   $(x+2)(x^2-2x+4) = 0 \Longrightarrow x = -2$

   (i) $x(x-3) + 4x - 12 = 0$
   $x(x-3) + 4(x-3) = (x-3)(x+4) = 0 \Longrightarrow x = 3$ or $x = -4$

2. Solve.

   (a) $\dfrac{1}{x-3} = 2$
   $x = 7/2$

   (b) $\dfrac{2x-1}{2} + \dfrac{-1}{x-2} = 0$
   $x = 0$ or $x = 5/2$

   (c) $\dfrac{1}{x+1} + \dfrac{2}{x-1} = -1$
   $x = 0$ or $x = -3$